KIT, AIR DISS & O_2 + He YOKE

INSTALLATION PROCEDURE

NOTE: This procedure applies to 2-gas machines with tubing arrangements prior to E-Z Plumb piping.

1. Turn the System Power switch to ON and disconnect all pipeline hoses.

2. Close all cylinder valves except the O_2 cylinder valve.

3. Set the oxygen flow rate to 5 l/min.

4. Open the N_2O flow control valve to drain pressure from the system.

5. Close the O_2 cylinder valve, and close the flow control valves. Pres the O_2 FLUSH button to drain pressure from the system.

6. Turn the System Power switch to STANDBY and remove AC power from the machine. Disable all circuit breakers.

7. Remove the screws securing the table top, and remove the table top.

8. Remove the flowmeter housing back cover.

CAUTION: Use ESD control on machines with a PCB assembly on the front plate.

9. Remove the vapor box front cover.

For machines with a multigas analyzer, remove all connections to the PCB assembly on the vapor box front plate, and remove the PCB from the plate.

10. Remove the vapor box back cover.

11. Remove the screws holding the angled front plate at the top of the flowmeter shields, and remove the plate.

NOTE:

On earlier machines these screws are accessible from the rear of the flowmeter housing. On later machines the angled front plate is secured with button head screws through the front of the plate.

12. Remove the oxygen flow control knob (if required for removal of the knob guard).

13. Remove the two screws securing the knob guard. (On earlier machines with a bar type knob guard, the screws are accessible from inside the flowmeter housing.)

14. Remove the hardware securing the flowmeter shield(s) and remove the shield(s).

INSTALLATION PROCEDURE (continued)

15. Using a small amount of Loctite #271 (red), thread a 3/16 in. tube straight fitting (P/N 4109402) into the back of a high pressure gauge (new machines only).

16. Using a small amount of Loctite #271 (red), thread a 1/16 in. hose barb (P/N 4106366) onto coupling (P/N 4103668) and thread the coupling into a pipeline pressure gauge. Use a small amount of Loctite #271 (red) on the gauge threads.

17. Place the pipeline gauge assembly into the upper hole of the gauge channel and secure the gauge with two 10-32 kep nuts. See Figure 1.

18. Place the cylinder gauge assembly into the lower hole of the gauge channel and secure the gauge with two 10-32 kep nuts.

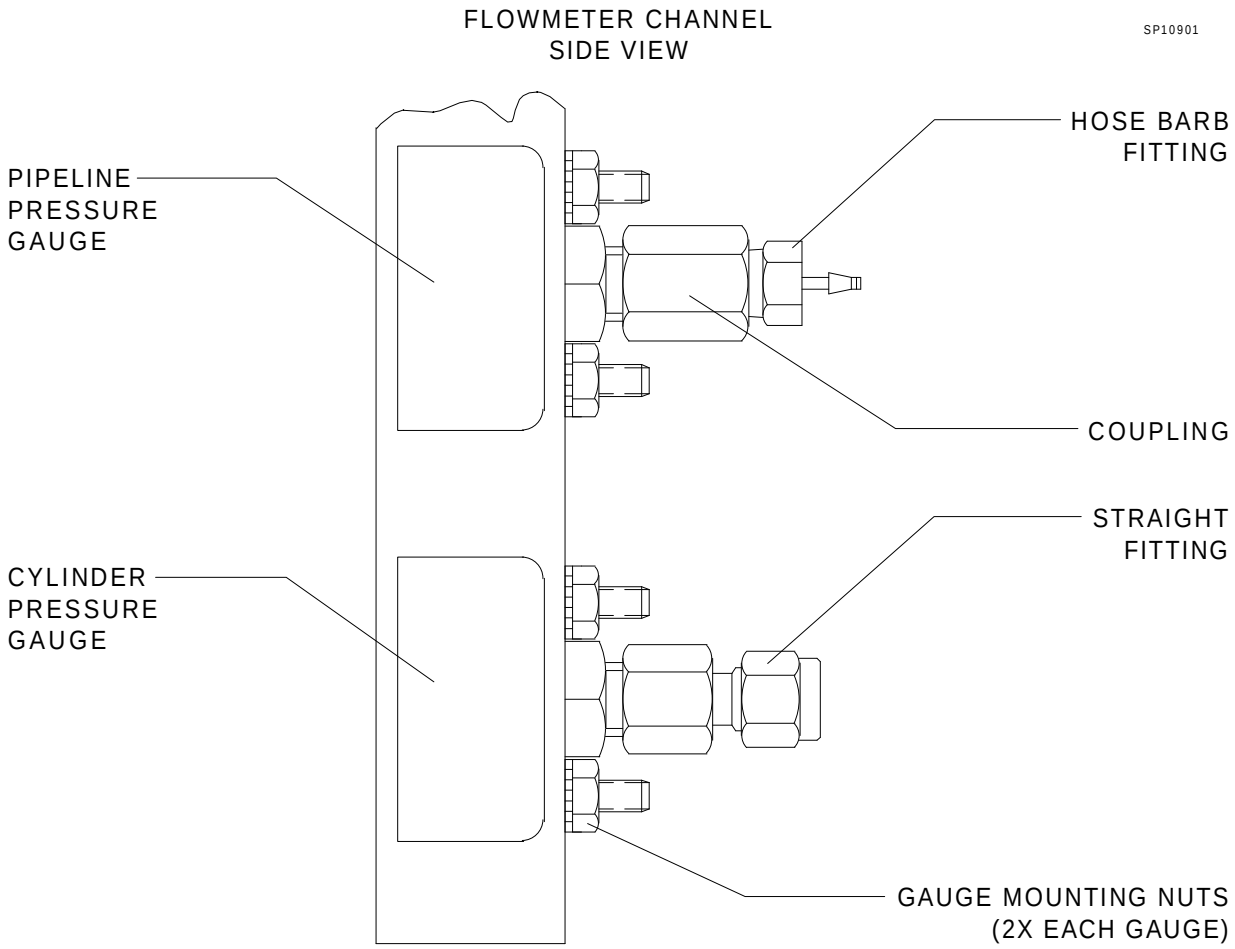

Figure 1: PIPELINE AND CYLINDER GAUGE ASSEMBLY AND MOUNTING

INSTALLATION PROCEDURE (continued)

NOTE:
The next four steps apply to older machines with a three-piece flowmeter channel arrangement. For later machines, proceed to Step 23.

19. For earlier 2-gas machines with a three-piece flowmeter channel arrangement, remove the center channel and install 2-gas channel assembly (P/N 4109642) using 8-32 x ¼ in. cap screws and #8 lock washers.

20. Mount two shoulder spacers (P/N 4110843) at the top and bottom center of the flowmeter channel with two 2-56 x ¼ in. pan head screws (P/N HW02000) from the back of the channel.

21. Thread the flow control valve (P/N 4103352) into the valve seat insert.

CAUTION:
Before tightening the valve cartridge, rotate the valve shaft several turns counter-clockwise to prevent bottoming the valve element into the seat when the cartridge is tightened.

22. Install the stop pin nut on the flow control valve. Proceed to Step 44.

NOTE:
The following steps apply to the installation of new style (prior to E-Z Plumb) 4-gas channel assembly in place of existing 2-gas assembly.

23. Remove all flowmeter tubes from the existing channels.

24. Remove the N_2O flow control knob.

25. Remove the stop pin nuts.

26. Turn the flow control valves fully counter-clockwise and remove the valves.

27. Remove the cross-over tubes connecting the fine and coarse flowmeters.

28. Remove the three socket head cap screws securing the bottom flowmeter block to the channel assembly.

29. Pull the bottom block forward, and disconnect the small diameter flex tubing from the block, and remove the block.

30. Measure and mark a location 1⅞ in. up from the lower center spacer hole, and centered in the channel as shown in Figure 2.

CAUTION:
Use masking tape to cover all open ports, fittings and tubing to prevent drilling chips from entering the pneumatic system.

31. Carefully drill a 7/64 in. dia. hole at this location, and de-burr any sharp edges.

32. Temporarily attach the 4-gas bottom block to the channel with the screws that were previously removed.

33. Using the bottom block as a template, mark the circumference of the 4th gas flow control housing onto the channel.

34. Remove the 4-gas bottom block.

INSTALLATION PROCEDURE (continued)

CAUTION:

Use masking tape to cover all open ports, fittings and tubing to prevent drilling chips from entering the pneumatic system.

35. Locate the center of the marked hole and drill an 11/16 in. dia. hole into the flowmeter channel, and de-burr any sharp edges.

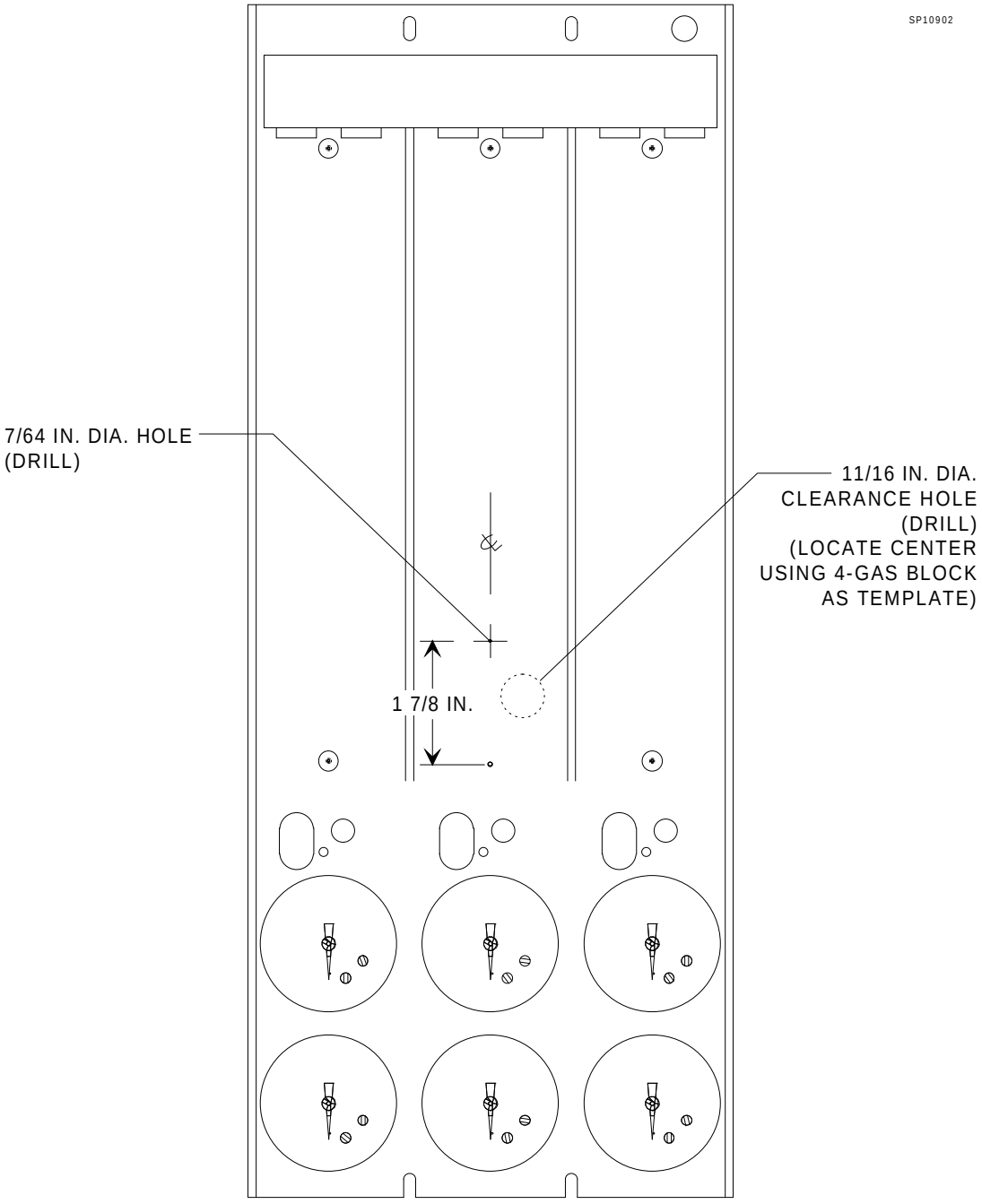

Figure 2: DRILLING LOCATIONS: 4-GAS CONVERSION

INSTALLATION PROCEDURE (continued)

36. Vacuum all metal chips from the interior and exterior of the machine and surrounding area.

37. Install a #018 O-ring (P/N 4102336) at the shoulder of each of the flowmeter inserts as shown in Figure 3.

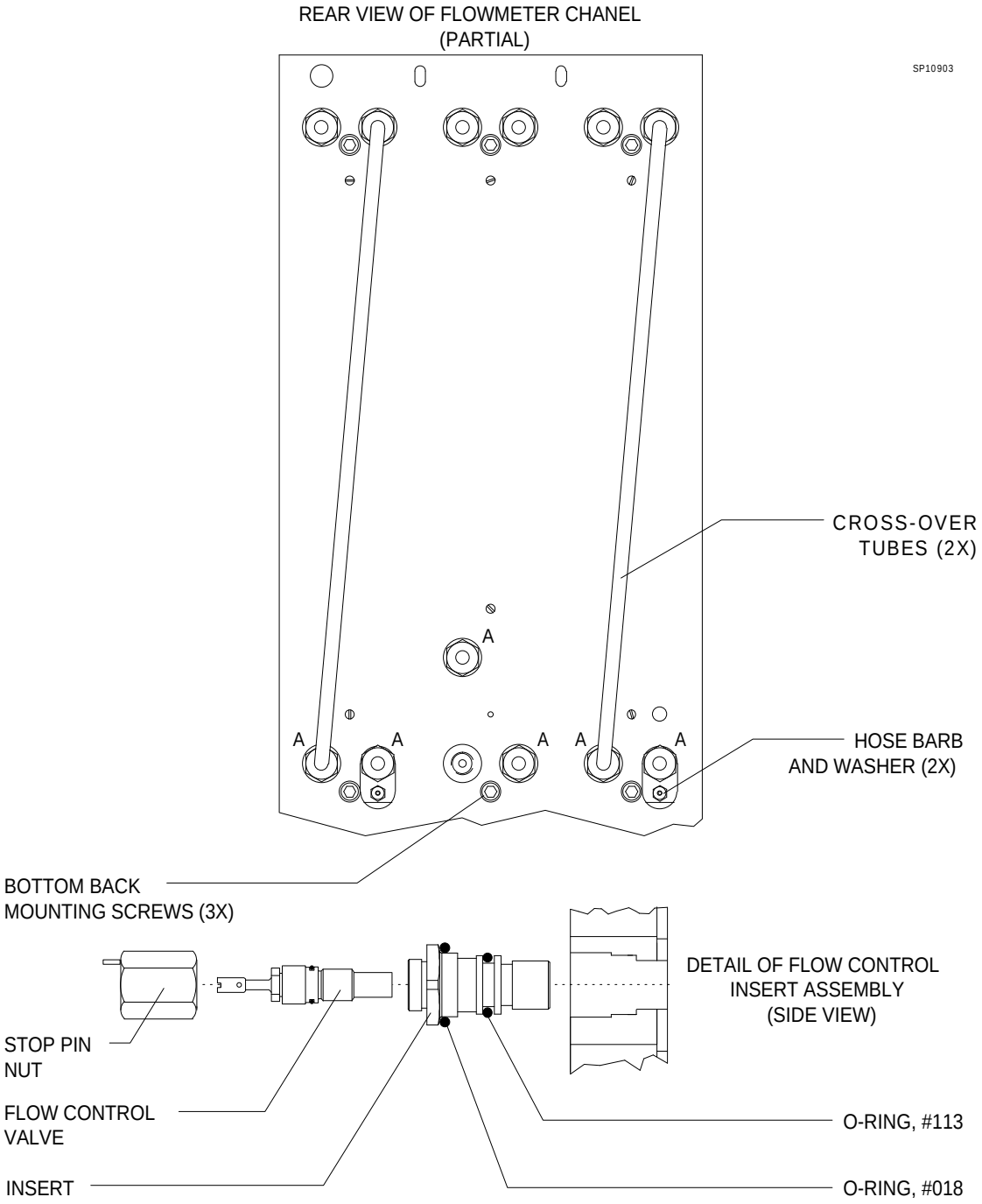

Figure 3: INSTALLATION OF FITTINGS AND FLOW CONTROL VALVE INSERT ASSEMBLY

INSTALLATION PROCEDURE (continued)

38. Install a #113 O-ring (P/N 4102792) in the grove of the flowmeter insert on all four inserts. Apply a small amount of Parker Super-O-Lube to these O-rings.

39. Thread the four flowmeter inserts into the bottom block until snug. DO NOT overtighten the inserts.

40. Apply a small amount of Loctite #222 (purple) to the threads of two 10-32 x 1/16 in. hose barb fittings, and install the fittings with washers into the 4-gas block.

41. Remove the nuts and ferrules from six ¼ in. tube straight fittings. Apply a small amount of Loctite #271 (red) to the threads of each fitting, and thread the fittings into the bottom block at the locations marked **A** Figure 3.

42. Secure the 4-gas bottom block assembly to the flowmeter channel using three ¼-20 x ⅝ in. socket head cap screws and ¼ in. lock washers from the back of the flowmeter channel.

43. Reinstall the cross-over copper tubes connecting the oxygen and nitrous oxide fine and coarse flowmeters.

44. Attach a new instruction label to the inside bottom of the top cabinet drawer as shown in Figure 4.

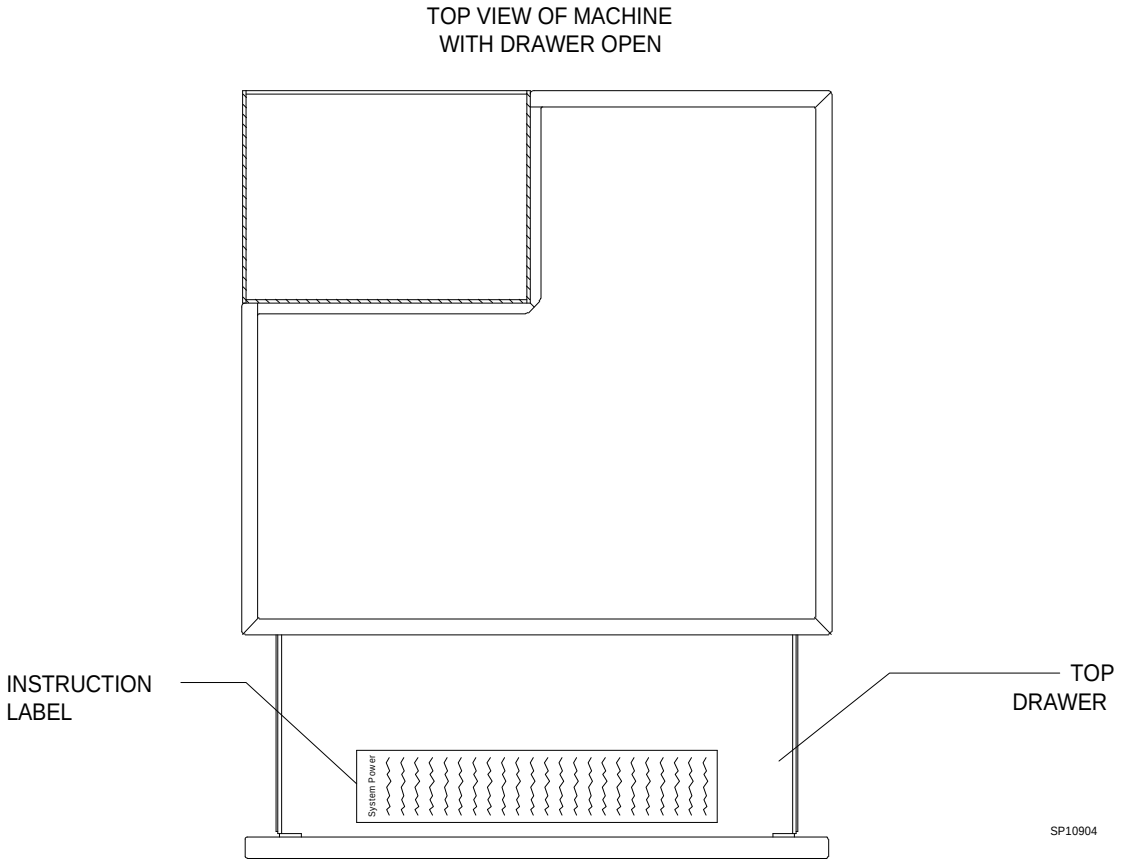

Figure 4: NEW INSTRUCTION LABEL LOCATION

INSTALLATION PROCEDURE (continued)

45. Mount the cylinder support on the bottom frame rail at the back of the machine (see Figure 5) using two ¼-20 x 2½ in. hex head screws, lock washers and flat washers.

46. Mount the O_2-He yoke (and spacer block on earlier models) on the upper frame rail of the machine as shown in Figure 5. Use two 5/16-24 x 1¾ in. socket head screws and lock washers. Ensure that the yoke has a brown/green O_2-He label.

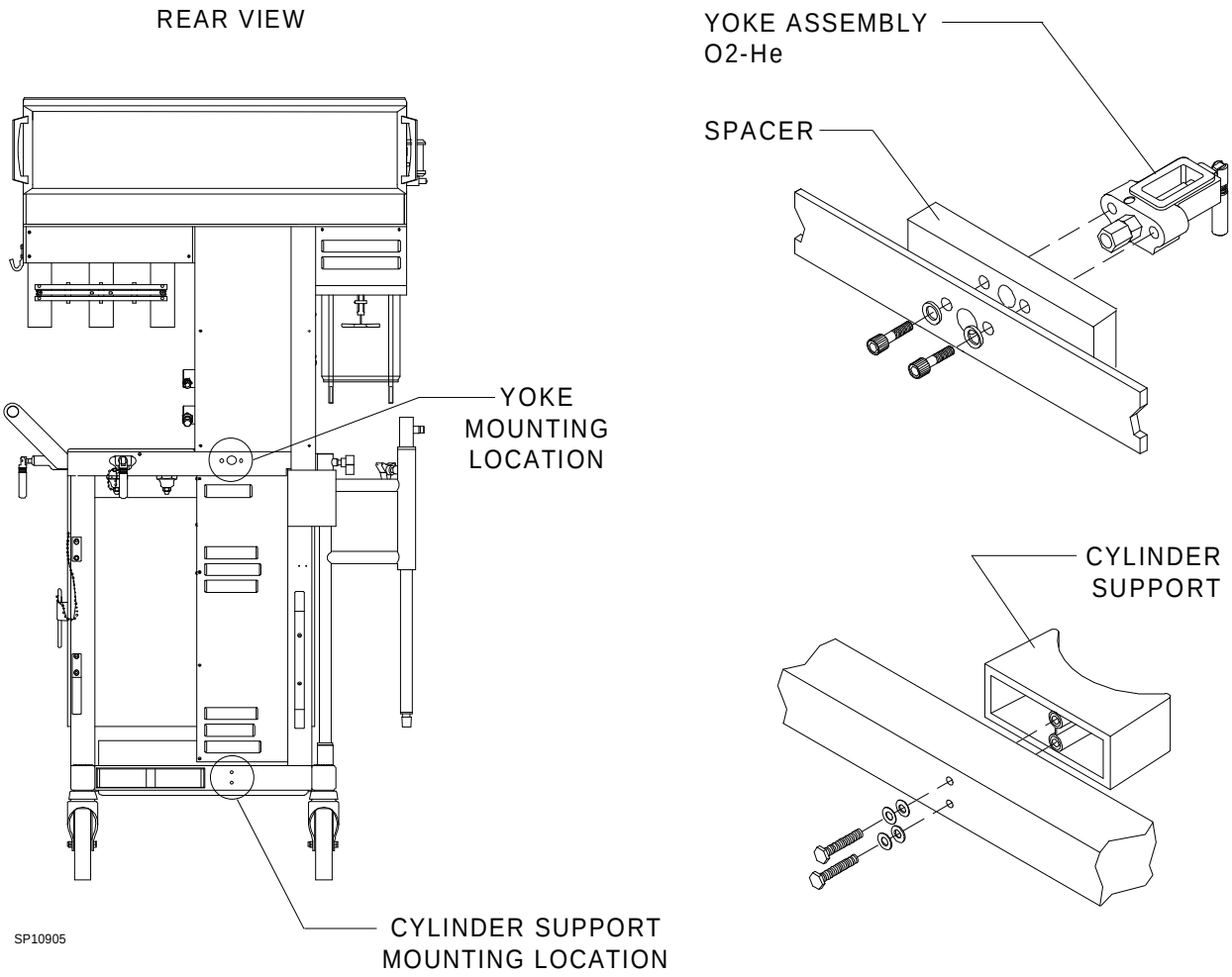

Figure 5: O_2-He YOKE AND CYLINDER SUPPORT MOUNTING LOCATIONS

INSTALLATION PROCEDURE (continued)

47. Position the O_2-He cylinder pressure regulator assembly as shown in Figure 6, with the Inlet marking toward the front of the machine.

48. Install two 10-32 x ½ in. set screws in the regulator mounting bracket and tighten them to a torque of 50 to 55 in.lbs.

49. Connect a 3/16 in. dia. (P/N 4104215) pre-bent copper tube between the O_2-He cylinder yoke and the inlet fitting on the O_2-He cylinder regulator. Ensure that the tubing is inserted into the ferrules correctly, and tighten the fittings securely. Install a brown/green O_2-He label on each end of this tube.

50. Install gauge covers on the pipeline and cylinder gauges.

NOTE:
Gauge covers are not used on later machines with one-piece flowmeter sub-assemblies.

51. Connect a 3/16 in. dia. (P/N 4104214) pre-bent copper tube between the O_2-He cylinder gauge and the port marked "HP" on the O_2-He cylinder regulator. Ensure that the tubing is inserted correctly, and tighten the fittings securely. Install a brown/green O_2-He label on each end of this tube.

52. Remove the ¾ in. plastic plug from the flowmeter housing directly above the O_2 pipeline inlet assembly.

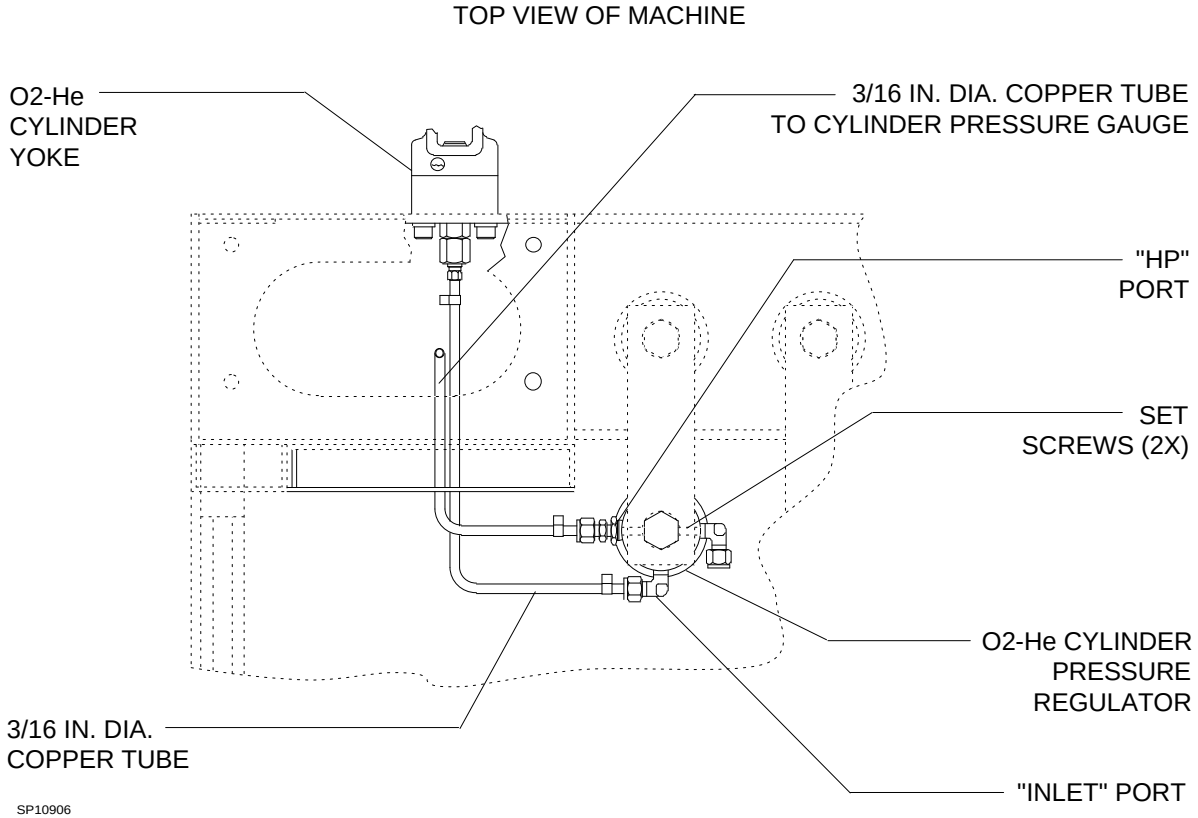

Figure 6: O_2-He CYLINDER REGULATOR MOUNTING AND H.P. CONNECTIONS

INSTALLATION PROCEDURE (continued)

53. Install a DISS air inlet housing in the hole where the plug was removed, using a ¾-16 hex nut and lock washer. Orient the DISS connection at a 70° angle as shown in Figure 7.

54. Install the filter assembly in the air inlet housing using a small amount of Loctite #271 (red) on the threads.

55. Install the tee fitting (P/N 4102760) as shown in Figure 7, with its side port facing downward. Use a small amount of Loctite #271 (red) on the threads.

56. Install a ⅛ NPT x 1/16 in. (P/N 4106366) nylon hose barb fitting in the tee as shown in Figure 7. Use a small amount of Loctite #271 (red) on the threads.

57. Install a ¼ in. tube to ⅛ NPT (P/N 4109410) ell fitting in the remaining port in the tee as shown in Figure 5. Use a small amount of Loctite #271 (red) on the threads.

NOTE: Remove the ferrule and nut before installing the fitting.

58. Install an 8 in.length of flex tubing between the air pipeline gauge and the nylon hose barb fitting that was previously installed. Secure both ends of the tubing with tie straps, and install a yellow "AIR" label on each end of this tube.

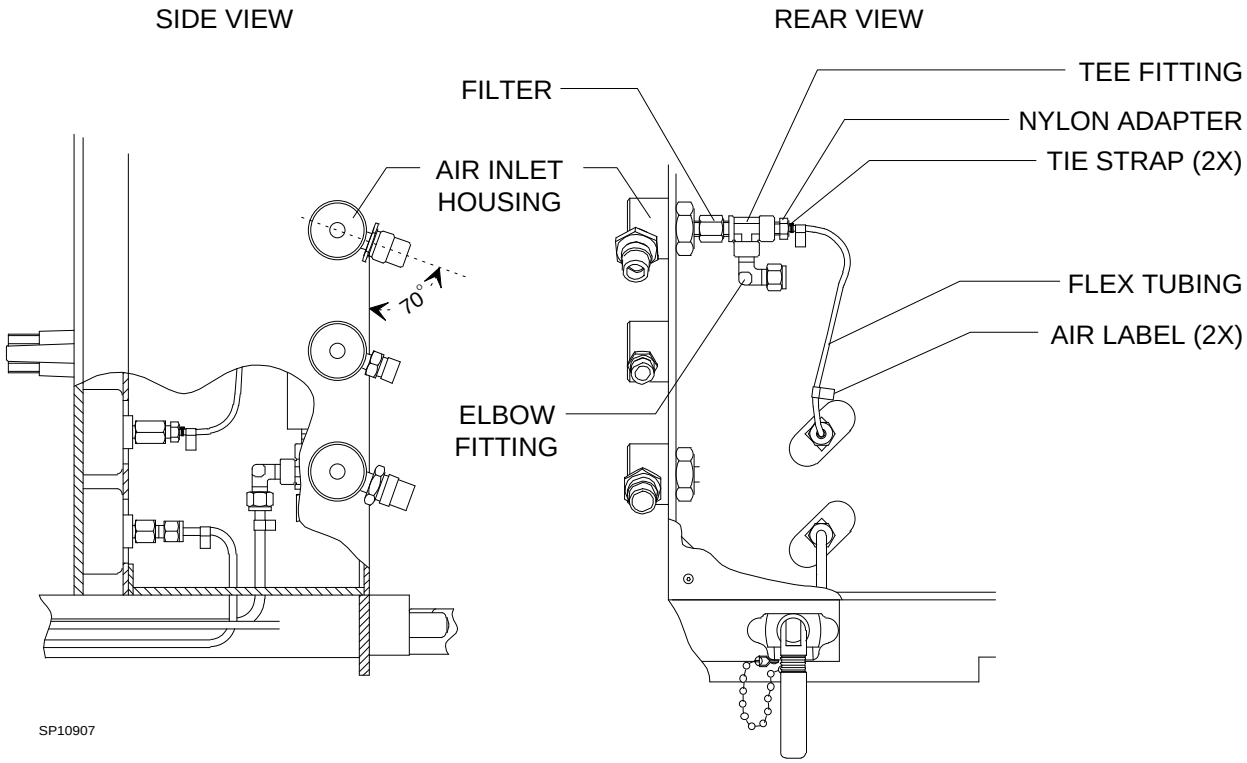

Figure 7: AIR PIPE LINE INLET ASSEMBLY

INSTALLATION PROCEDURE (continued)

59. Remove the three wires connected to the O_2 low pressure alarm switch, and remove the alarm switch assembly by disconnecting the fittings indicated in Figure 8.

60. Remove the 3-way fitting and restrictor assembly by disconnecting the fitting at the O_2 flowmeter inlet. DO NOT disturb the lower tube connection at the 3-way fitting. Carefully disconnect the flex tubing connections.

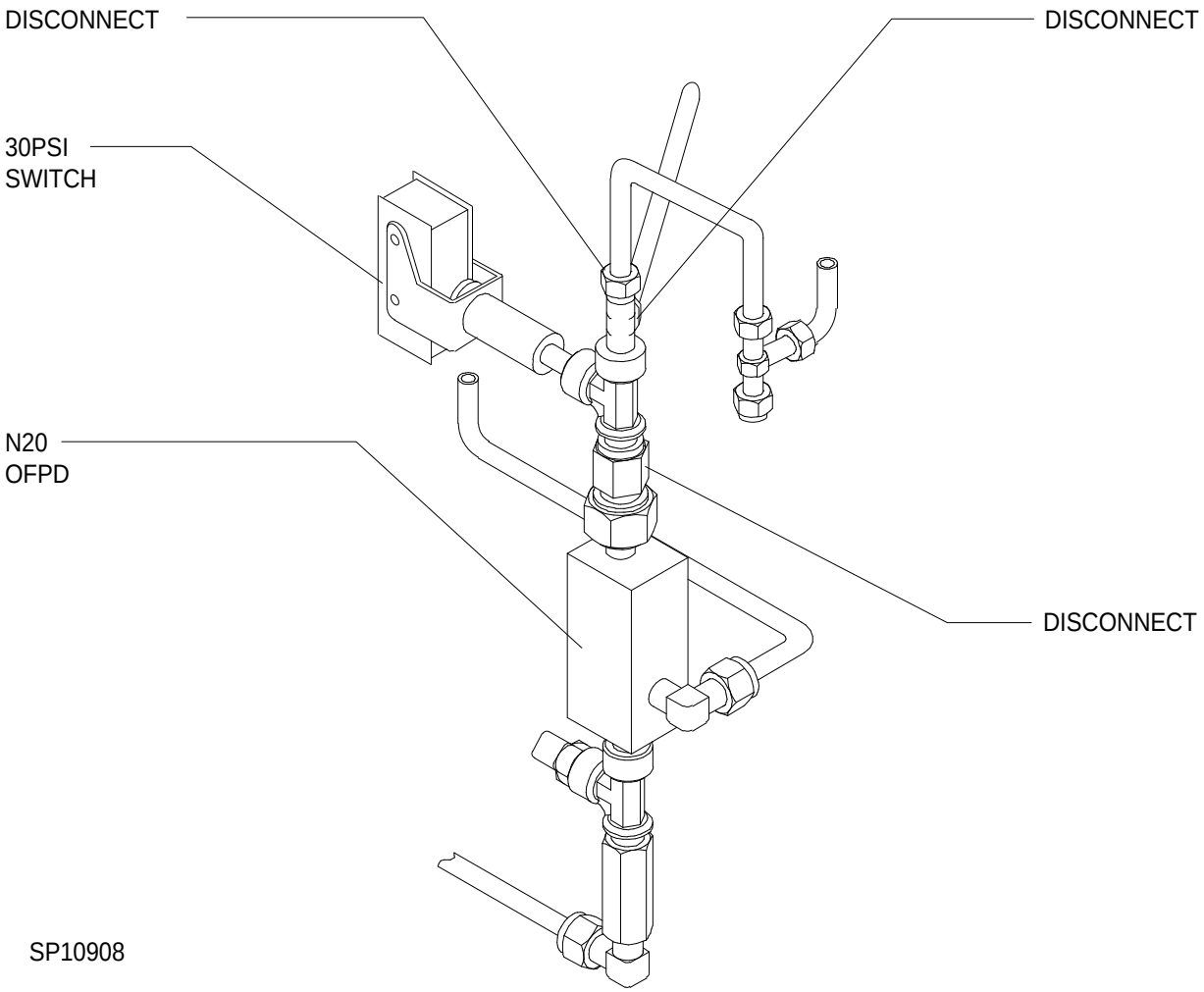

Figure 8: 30 PSI SWITCH REMOVAL

INSTALLATION PROCEDURE (continued)

61. Remove the manifold assembly connected to the O_2 and N_2O outlets at the top of the flowmeters.

62. Assemble the compression nuts and ferrules onto the open ended tubes on the new 4-gas manifold assembly. Ensure that the Swagelok fittings with the two-piece ferrules are assembled as shown in Figure 9. Before tightening the compression nuts, ensure that the tubing is inserted into the fittings as far as possible.

63. Attach the copper tubes on the manifold assembly on the ports at the top of the flowmeter bank and tighten the compression nuts.

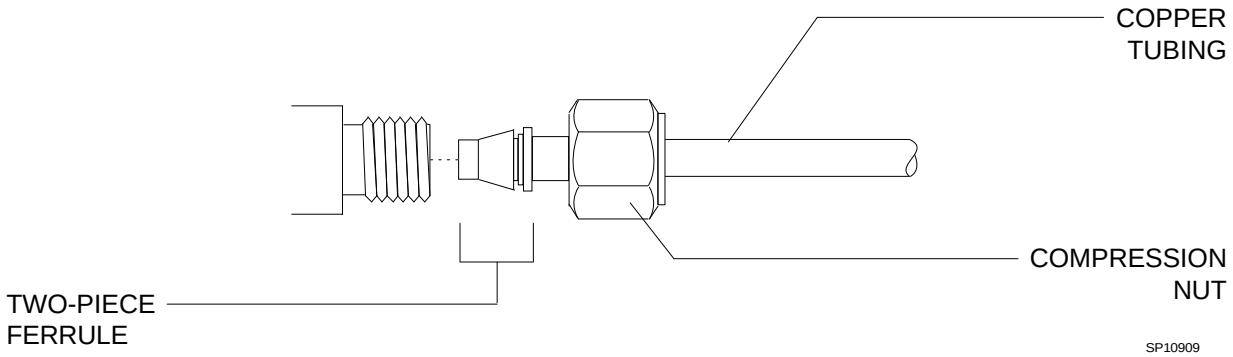

Figure 9: ASSEMBLY OF SWAGELOK FITTINGS

64. Attach a gas-identifying label to each tube on the manifold assembly as shown in Figure 10.

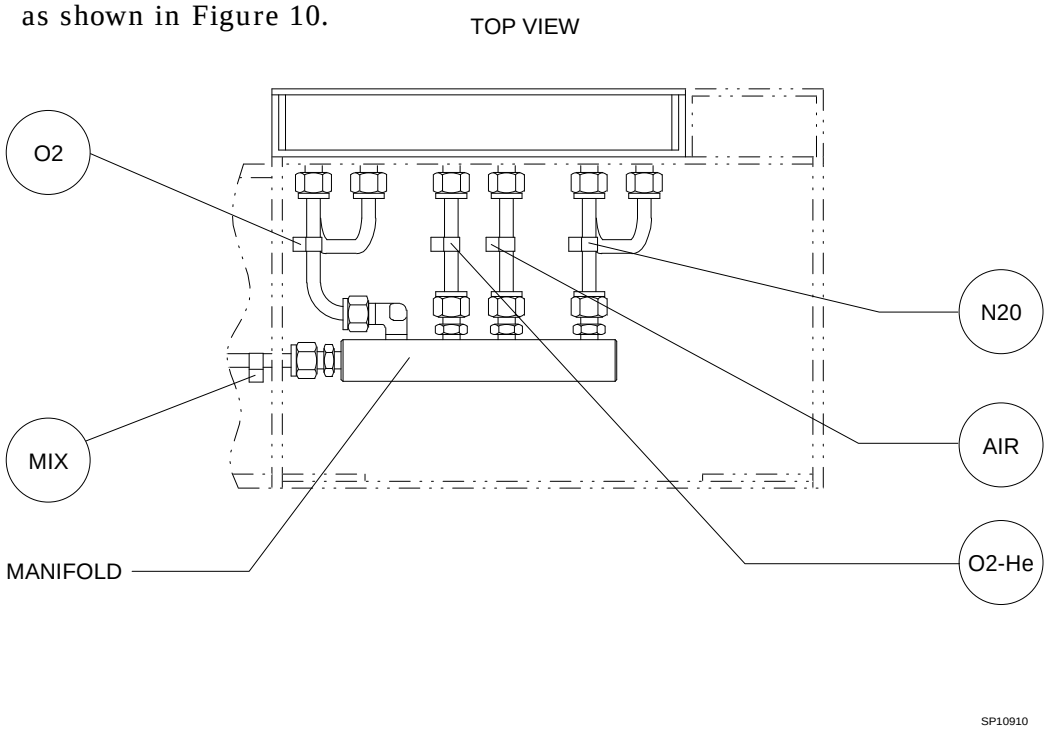

Figure 10: FOUR GAS MANIFOLD ASSEMBLY WITH LABELS

INSTALLATION PROCEDURE (continued)

65. Remove the 30 PSI switch from the switch assembly that was removed in a previous step.

66. Remove any debris from the threads of the 30 PSI switch.

67. Apply sealing tape to the threads of the 30 PSI switch and install a female ⅛ in. elbow (P/N 4104774) onto the switch oriented as shown in Figure 11.

68. Apply a drop of Loctite #271 (red) to the threads of tee fitting (P/N 4109407). Install the tee fitting in the elbow, with the side port of the tee fitting positioned 60° past the switch as shown in Figure 11.

69. Apply a drop of Loctite #271 (red) to the threads of ⅛ MPT x 1/16 hose barb adapter fitting (P/N 4106366), and install the adapter in a DISS connector. See Figure 12.

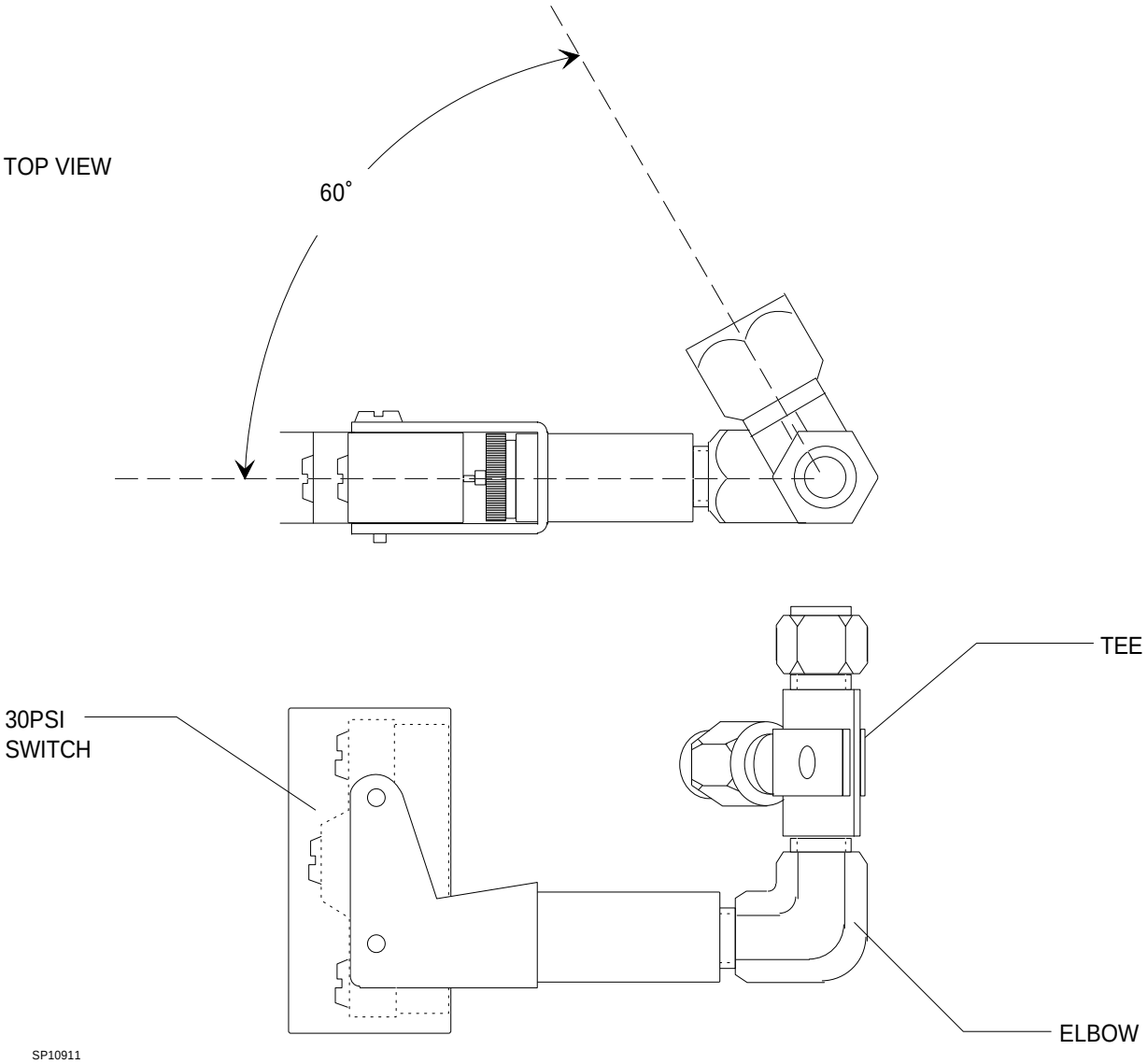

Figure 11: 30 PSI SWITCH ASSEMBLY DETAILS

INSTALLATION PROCEDURE (continued)

70. Attach the DISS connector assembly to the N_2O OFPD. DO NOT apply Loctite to this connection. See Figure 12.

71. Re-connect the wiring to the 30 PSI switch as follows:

Orange	to COM
Brown	to N.O.
White/Orange	to N.C.

72. Install a new 4-way fitting and restrictor assembly (see Figure 12) by connecting its lower tube to the O_2 flowmeter inlet. Install a green O_2 label at each end of the copper tube.

73. Reinstall the 30 PSI switch assembly by joining the upper tube of the 4-way fitting to the tee fitting on the switch assembly.

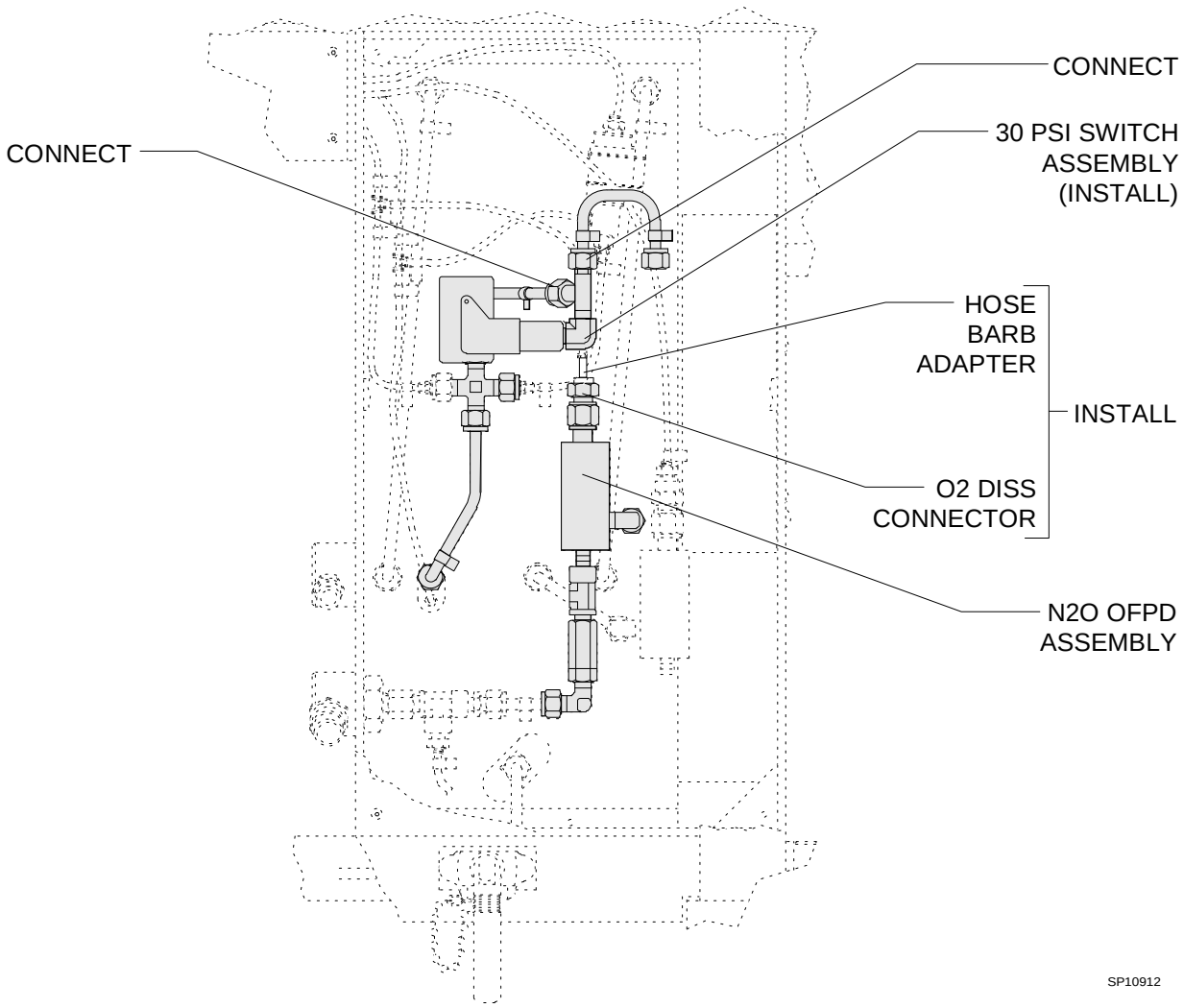

Figure 12: 30 PSI SWITCH INSTALLATION AND N_2O OFPD DETAILS

INSTALLATION PROCEDURE (continued)

74. Join the upper tube of the O_2 pressure switch assembly to the tee fitting connected to the system power switch assembly. Tighten the fittings.

75. Connect a ¼ in.dia.(P/N 4110837-015) "L" tube to the O_2-He cylinder pressure regulator as shown in Figure 13. Install a green/brown "O_2-He" label on each end of this tube.

76. Connect the other end of the "L" tube to a ¼ in. tee fitting (P/N 4108636), and install a plug in the side port of the tee fitting.

77. Connect the short end of a ¼ in.dia. (P/N 4110279) pre-bent tube to the remaining port on the tee fitting as shown in Figure 13. Install a green/brown "O_2-He" label on each end of this tube.

78. Connect a ¼ in.dia. (P/N 4110836-006) "S" tube to the O_2-He flow control valve. See Figure 14. Install a green/brown "O_2-He" label on each end of this tube.

79. Position the Air OFPD in the flowmeter housing and connect an "S" tube (P/N 4110836-004) between the Air flow control valve and the side fitting on the OFPD. See Figure 14. Install a yellow AIR label on each end of this tube.

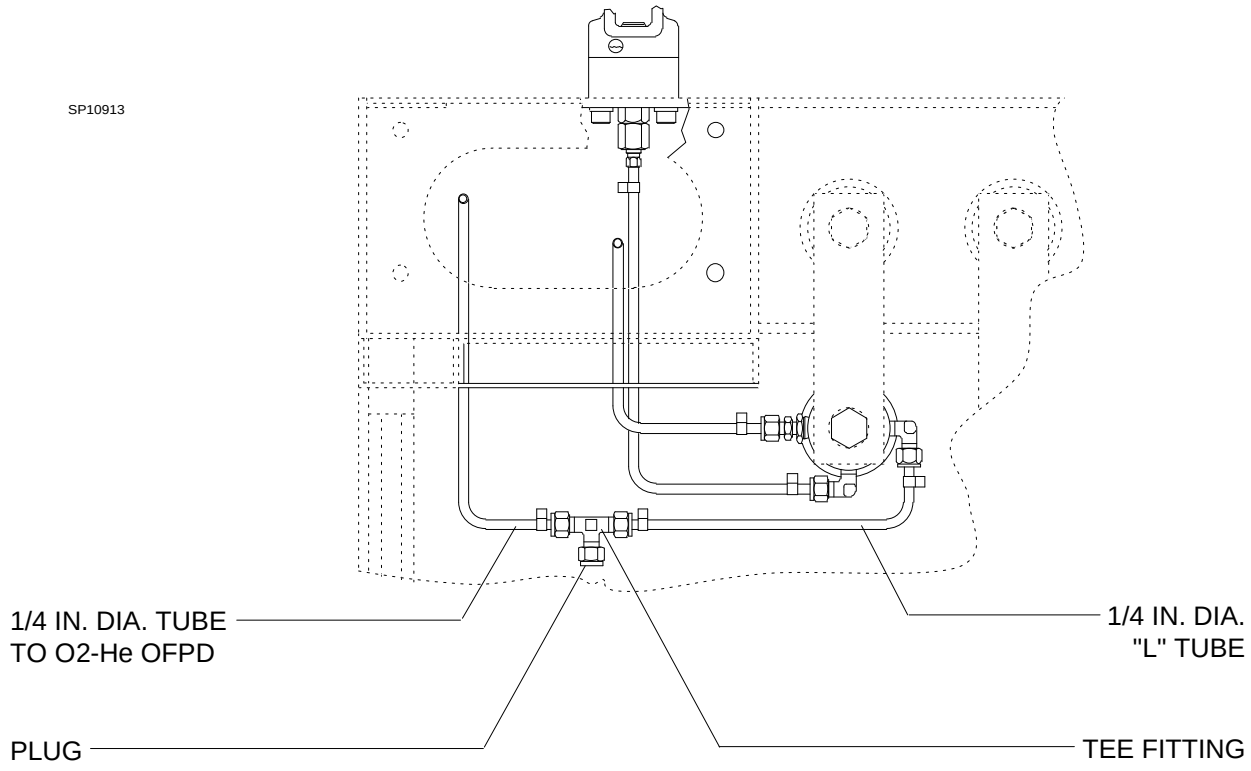

Figure 13: O_2-He CYLINDER REGULATOR L.P. CONNECTIONS

INSTALLATION PROCEDURE (continued)

80. Connect a copper tube (P/N 4108803) between the air inlet assembly elbow fitting and the elbow fitting at the lower end of the check valve on the Air OFPD. Install a yellow AIR label on each end of this tube.

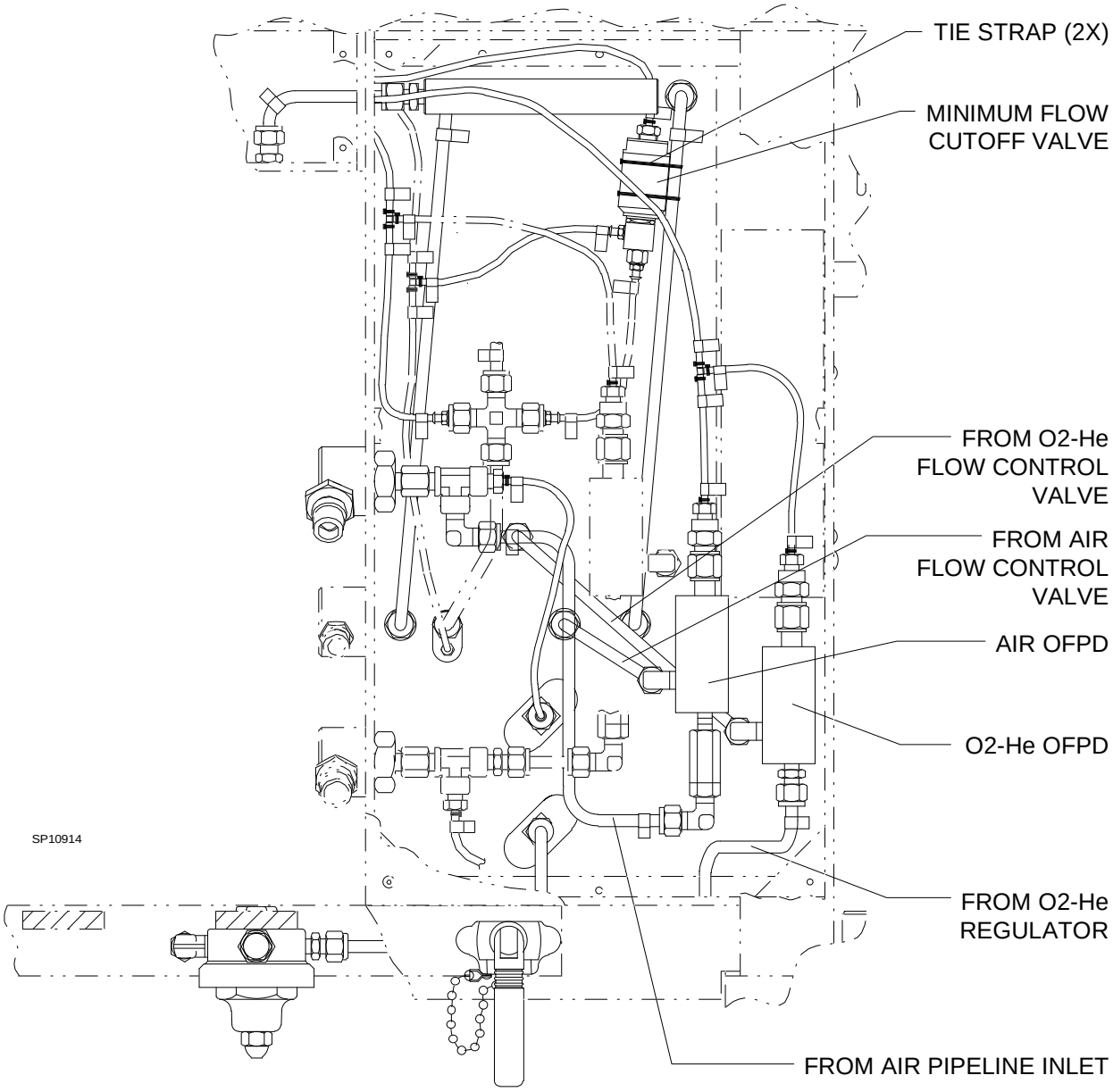

Figure 14: OFPD AND MINIMUM FLOW VALVE INSTALLATION

INSTALLATION PROCEDURE (continued)

81. Position the O_2-He OFPD in the flowmeter housing and connect the side fitting on the OFPD to the previously installed "S" tube from the O_2-He flow control valve.

82. Connect the bottom fitting on the O_2-He OFPD to the copper tube from the O_2-He regulator that was previously installed.

83. Attach the minimum flow cutoff valve to the N_2O flowmeter crossover tube with two tie straps as shown in Figure 14.

84. Mount the gas selector valve assembly to the floor of the vapor box, oriented as shown in Figure 15, with two 10-32 x 5/16 in. socket head screws, lock washers and flat washers.

NOTE:
Skip the next four steps if the ORMC does not have a wire harness and switch.

85. Attach the pressure switch assembly to the copper tubing in the vapor box with two tie straps as shown in Figure 15.

86. Join the wire harness connectors from the alarm channel and the ORMC to the presure switch assembly as shown in Figure 15.

87. Install a 16 in. length of flex tubing between the right side port of the pressure switch and the front port on the gas selector switch assembly. Secure each end of the tubing with a press-on clamp. Install a green O_2 label on each end of this tube.

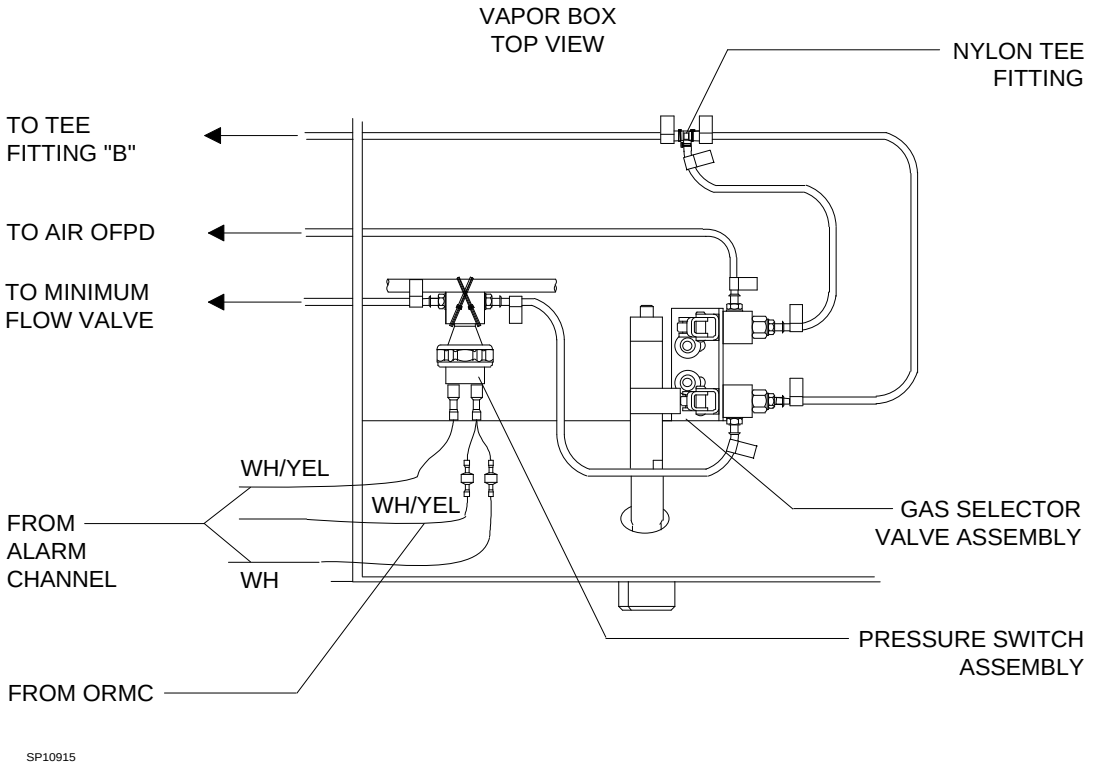

Figure 15: GAS SELECT VALVE AND PRESSURE SWITCH CONNECTIONS

INSTALLATION PROCEDURE (continued)

88. Connect a 13½ in. length of flex tubing to the left side port of the pressure switch in the vapor box, and secure it with a press-on clamp. Connect the other end of the tubing to the top hose barb on the minimum flow valve and secure it with a tie strap. Install a green O_2 label at each end of this tube.

NOTE: Skip the next step if the ORMC has a wire harness and switch.

89. Connect a 32½ in. length of flex tubing to the front port on the gas selector switch and secure it with a press-on clamp. Connect the other end of the tubing to the top hose barb on the minimum flow valve and secure it with a tie strap. Install a green O_2 label on each end of this tube.

90. Connect a 10½ in. length of flex tubing to the side port of the front valve on the gas selector, and secure it with a press-on clamp. Connect the other end of the tubing to a nylon tee fitting and secure it with a tie strap. Install a green O_2 label on each end of this tube as shown in Figure 15.

91. Connect an 8 in. length of flex tubing from the side port of the rear valve on the gas selector and secure it with a press-on clamp. Connect the other end of the tubing to the center port of the nylon tee fitting, and secure it with a tie strap. Install a green O_2 label on each end of this tube.

92. Connect a 24 in. length of flex tubing from the rear port on the gas selector assembly to the hose barb on the top of the air OFPD in the flowmeter housing. See Figures 15 and 16. Secure the valve end with a press-on clamp, and a tie strap on the OFPD. Install a green O_2 label on each end of this tube.

93. Cut the flex tubing two inches above the hose barb on the top of the air OFPD and install a nylon tee fitting as shown in Figure 16.

94. Connect a six inch piece of flex tubing to the side port of the nylon tee installed in the previous step. Connect the other end of this tube to hose barb on the top of the O_2-He OFPD. Secure all connections with a tie strap and install a green O_2 label at the ends of these hoses.

95. Connect a 12 in. length of flex tubing from the remaining port of the nylon tee fitting in the vapor box to the top of nylon tee fitting "B" in the flowmeter housing. See Figure 16. Secure each end of the tube with a tie strap, and install a green O_2 label at each end of the tube.

96. Connect a 5 in. length of flex tubing to the bottom of nylon tee fitting "B" and secure it with a tie strap. Connect the other end of the tubing to side port "A" on the 4-way fitting. See Figure 16. Secure this end with a press-on clamp, and install a green O_2 label at each end of the tube.

97. Connect an 8 in. length of flex tubing from the top port on the N_2O OFPD to the remaining port on nylon tee fitting "B" and secure it with a tie strap.

INSTALLATION PROCEDURE (continued)

98. Connect an 8 in. length of flex tubing from side port "B" on the 4-way fitting to the bottom port of the minimum flow valve, and secure the connection with a press-on clamp. See Figure 16.

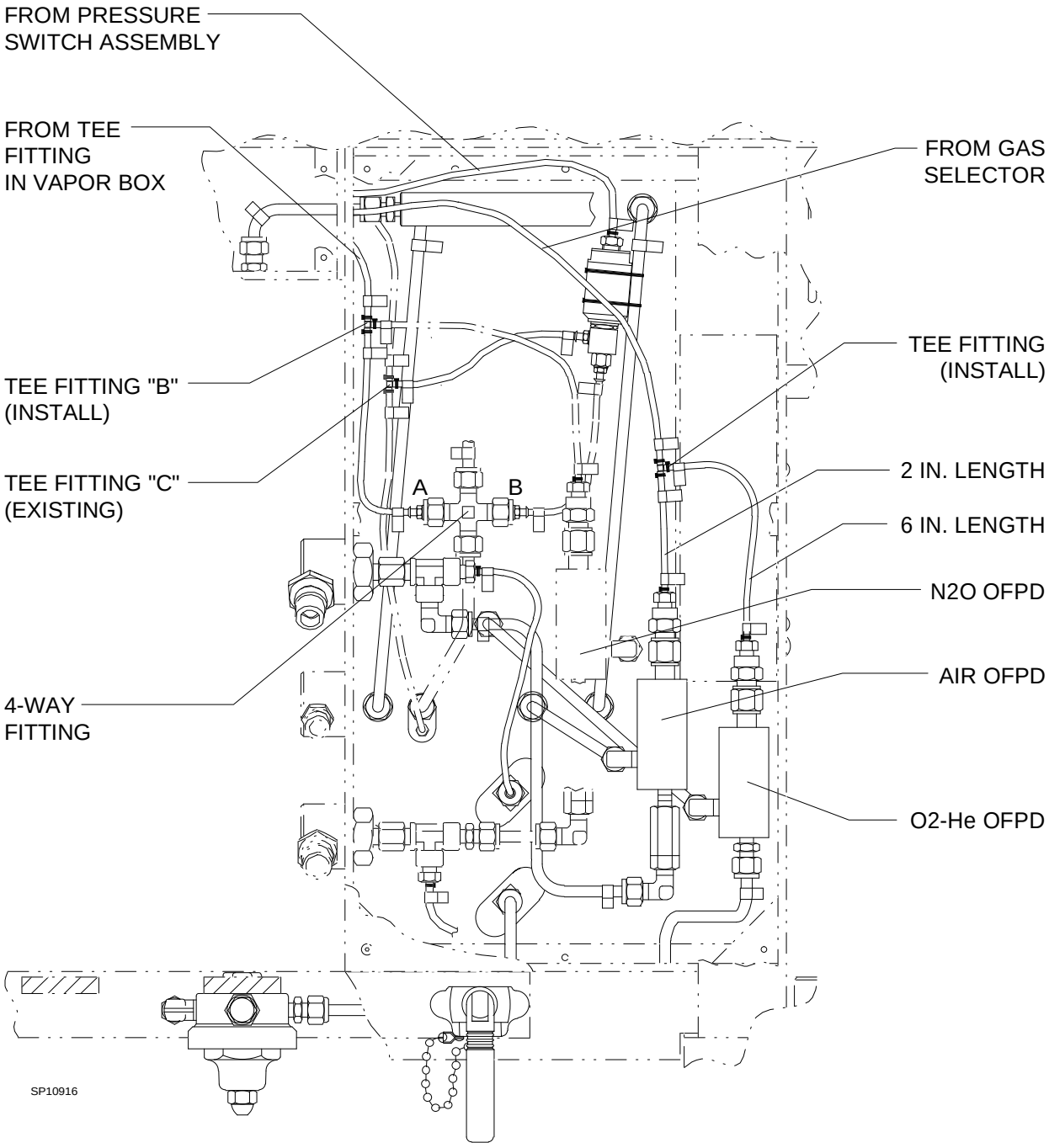

Figure 16: FLEX TUBING CONNECTIONS

INSTALLATION PROCEDURE (continued)

99. Connect a 7 in. length of flex tubing to the side port of nylon tee fitting "C", and secure it with a tie strap. Connect the other end of the tubing to the side port of the minimum flow valve, and secure it with a press-on clamp. Install a green O_2 label on each end of this tube.

100. Inspect the existing flex tubing between the O_2 flow control valve and the bottom port on nylon tee fitting "C", and ensure that each end is secured by a tie strap.

101. Inspect the existing flex tubing between the top port on nylon tee fitting "C" and the ORMC/ORM assembly. Ensure that each end is properly secured.

102. Assemble the gas selector switch cam assembly to the new vapor box front panel with two 8-32 x 3/8 in. socket head screws and lock washers. See Figure 17.

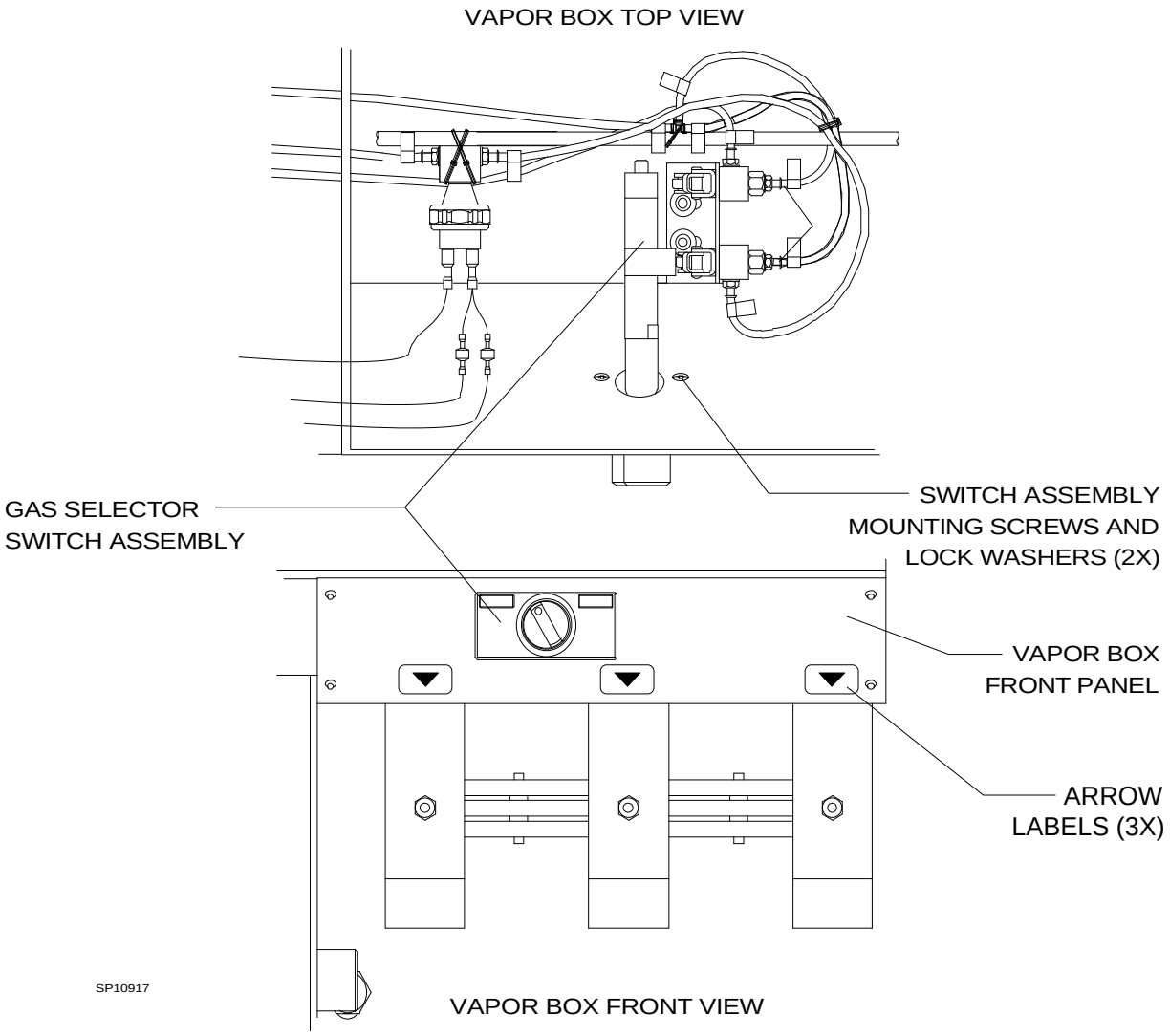
VAPOR BOX TOP VIEW
GAS SELECTOR SWITCH ASSEMBLY
SWITCH ASSEMBLY MOUNTING SCREWS AND LOCK WASHERS (2X)
VAPOR BOX FRONT PANEL
ARROW LABELS (3X)
SP10917
VAPOR BOX FRONT VIEW

Figure 17: GAS SELECTOR SWITCH ASSEMBLY

INSTALLATION PROCEDURE (continued)

103. Use the appropriate vapor box front plate on machines with a multigas analyzer. Apply arrow labels at the locations shown in Figure 17, and attach the vapor indicator PCB assembly to the front panel with the hardware that was previously removed. Restore all connections to the vapor indicator PCB.

104. Install the vapor box front panel and ensure that the selector switch cams operate the gas select valves correctly. Set the selector to the ALL GAS position.

105. Connect AC power to the machine.

106. Connect the air pipeline supply hose to the machine.

107. Install an O_2-He cylinder in the new yoke, and open one cylinder valve each of Oxygen, Nitrous Oxide and O_2-He.

108. Remove the oxygen fine flowmeter from its channel by turning the upper flow tube retainer counter-clockwise with a cut down 5/32 allen key.

109. Close the N_2O flow control valve; ensure that all other flow control valves are fully open.

110. Turn the System Power switch ON to flush any debris from the new piping, then return the switch to the STANDBY position.

111. Install the air and O_2-He flow tube inserts and O-rings in the bottom block. Install the flow tube gaskets, and carefully install the air and O_2-He flow tubes with their markings facing forward.

112. Carefully reinstall the oxygen fine flow tube with its markings facing forward.

113. Remove the N_2O fine flow tube and open the N_2O flow control valve. Turn the System Power switch ON to flush any debris from the new piping, then return the switch to the STANDBY position.

114. Carefully reinstall the N_2O fine flow tube.

115. Install the air, O_2-He and N_2O flow control knobs and ensure that each "off stop" is properly set.

116. Verify that the air and O_2-He flow meters operate over their full range.

117. Ensure that the flowmeter lights PCB is correctly in place. (The black wire is connected to the terminal at the back of the PCB.)

118. Install the correct 4-gas flowmeter shield.

119. Install the knob guard, and reinstall the oxygen flow control knob.

120. Reinstall the angled front plate at the top of the flowmeter shield. On earlier machines this plate is retained by two screws from the back of the panel. (On later machines with a one-piece plate, this plate was installed in a previous step as part of the vapor box front cover.)

121. Close all cylinder valves and drain the pressure from the system.

122. Proceed to the Adjustment and Test section.

OXYGEN SUPPLY PRESSURE ALARM ADJUSTMENT AND TEST

1. Remove the plug from the O_2 cylinder pressure regulator output line, and connect a test gauge (#S000063-A) to the tee fitting.
2. Attach an oxygen cylinder to the oxygen yoke on the machine.
3. Open the oxygen cylinder valve and set the oxygen flow rate to 1 L/min.
4. Close the oxygen cylinder valve.
5. As the pressure drops, the oxygen supply pressure alarm shall activate when the pressure is between 40 and 34 psi as indicated on the test gauge.
6. If the alarm activates when the pressure is below 34 psi or above 40 psi, turn the adjustment wheel on the oxygen supply pressure switch, repeat the test and adjust as necessary to bring the set point into the correct range.
7. Close the oxygen flow control valve.
8. Allow pressure to drain from the system.
9. Close the flow control valve and turn the System Power switch to STANDBY.
10. Disconnect the test gauge and replace the plug in the tee fitting.

O_2-He AND AIR CIRCUIT ADJUSTMENT AND TEST

Cylinder Pressure Regulator Adjustment

1. Remove the plug from the tee fitting in the O_2-He cylinder pressure regulator output line, and connect a test gauge (#S000063A) to the tee fitting.
2. Turn the System Power switch to ON.
3. Set the Gas Select switch to the ALL GAS position.
4. Open the O_2 cylinder valve and set the oxygen flow rate to 4 l/min.
5. Open the O_2-He cylinder valve and set the O_2-He flow rate to 4 l/min.
6. The test gauge should indicate between 43 and 49 psi. If adjustment is needed, remove the acorn nut from the bottom of the regulator to expose the adjusting screw. Turn the screw to bring the pressure reading into the correct range. Replace the acorn nut.
7. Close the cylinder valves and allow pressure to drain from the system.
8. Close the flow control valves and turn the System Power switch to STANDBY.
9. Disconnect the test gauge and replace the plug in the tee fitting.

O_2-He AND AIR CIRCUIT ADJUSTMENT AND TEST (continued)

High Pressure Leak Test

10. Open all cylinder valves and allow the gauge pressures to stabilize.

11. Close all cylinder valves and remove all cylinders from their yokes. Observe the cylinder pressure gauges. The pressure should not drop more than 50 psi over the next two minutes.

12. Reattach the cylinders to the yokes.

Low Pressure Leak Test

13. Ensure that all flow control valves are closed.

14. Connect a test gauge and B.P. bulb to the freshgas outlet, and pressurize the system to 50 cm H2O.

15. The pressure should not drop more than 10 cm H_2O in thirty seconds.

16. Disconnect the test gauge.

OFPD Tests

17. Turn the System Power switch to ON.

18. Open the O_2 and the O_2-He cylinder valves.

19. Set the oxygen flow rate to 1.0 l/min., set the air and the O_2-He flow rates to 1.0 l/min.

20. Close the O_2 cylinder valve. When the oxygen flow stops, the air and the O_2-He flow must also drop to zero.

Flowmeter Test

21. Open the O_2 cylinder valve.

22. Adjust the flow of air over the full range of the flowmeter. The float should move freely over the entire range.

23. Adjust the flow of O_2-He over the full range of the flowmeter. The float should move freely over the entire range.

Gas Select Switch Test

24. Open the N_2O cylinder valve.

25. With the switch in the ALL GAS position, open all of the flow control valves and verify that all gases are able to flow.

26. Turn the Gas Select switch to O_2 + N_2O. The flow of air and O_2-He should stop.

27. Close all of the flow control valves. There should be a minimum oxygen flow.

28. Turn the Gas Select switch to ALL GAS. The minimum flow should stop.

O_2-He AND AIR CIRCUIT ADJUSTMENT AND TEST (continued)

ORMC Test

NOTE:
If the alarm channel on the machine does not have an O_2/N_2O alarm lamp, disregard the alarm functions in the following tests.

29. Fully open the N_2O flow control valve. Slowly open and close the O_2 flow control valve, and observe that the ORMC is controlling the flow of nitrous oxide. There should be no ORMC alarm with the Gas Select switch in the ALL GAS position.

30. Turn the Gas Select switch to O_2 + N_2O. Fully open the N_2O flow control valve. Slowly open and close the O_2 flow control valve, and observe that the ORMC is controlling the flow of nitrous oxide. The ORMC alarm should function correctly with the Gas Select switch in the O_2 + N_2O position.

Re-Assembly

31. Close all cylinder valves and flow control valves; turn the System Power switch to STANDBY.

32. Ensure that the "off stop" is correctly set on the flow control valves, and install knob labels as needed.

33. Reinstall the table top on the machine.

34. Reinstall the vapor box back cover and the flowmeter housing back cover.

35. Perform a complete PMS procedure on the machine.

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